Exacting Amplitude Control Mechanism for Optical Beams in Phase Cancellation Distortion Based Radio Detection Systems

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Introduction

Although a capability already exists which allows for relatively fine amplitude control over light, extant technologies allow for better control over properties of light such as frequency, polarity and phase than they do amplitude.

In the publication of 5 November 2025, it is explained that precisely identical light (that is, matched in phase, frequency and amplitude) moving in transverse directions can be used in conjunction with a photon counter in order to precisely measure electromagnetism of various frequencies in the ambient environment. This approach, however, requires that both beams have quantities of photons which are exactly identical with no surges at all either in electrical power (although some algorithmic correction may be possible) or in the behavior of the LEDs.

The noise level of the amplitude, although not perceptible to the naked eye, would well-exceed the effects generated by the light-slowing effects of ambient EM upon the non-control beam predicted in the paper of 5 November 2025. Thus, there is a requirement for a mechanism capable of providing extreme control over the amplitude property of both beams in order to make possible the stated objective of the 5 November 2025 publication.

Abstract

A previous publication from this author for what is termed a light helicizing prism (19 October 2023,) may be the best avenue toward achieving this objective.

A large number of smaller LED diodes could be aggregated in order to mitigate surges in amplitude with multiple fiber channels leading to one of the previously described (ibid.,) prisms. Each beam would have its own corresponding set of two prisms which would perform this amplitude-control step after frequency and phase control steps are completed.

The phenomenon of de-helicization, as this author previously pointed out (ibid.,) can be put to use in a variety of ways. Purposeful de-helicization using converging beams of helical light is useful any time one wishes to generate a point light source remotely which emanates in all directions, but from a location to which one does not have access and where there is no physical light bulb or diode. This has applications ranging from meteorology to coagulation-based transistor photofabrication in a three-dimensional space. Whereas converging phase-opposed light undergoes phase cancellation and is eliminated, converging helicity-opposed light is not eliminated and is merely converted back into omni-directional non-helical light.

In this case, our goal is to create a pair of sources of light which are extremely consistent, to within a few photons per wave, in terms of their amplitude.

Helicization prisms are useful in this regard as any irregularity in the intensity of the light passed through either prism, even prior to dehelicization, would result in the excess light not becoming part of the dehelicized light emission, which is omnidirectional. This step would eliminate with near-entirety any inconsistency originating in whichever of the two beam generators is the more powerful of the two (no matter how hard we try to make them identical, one will necessarily be more powerful and which of these is more powerful could change depending upon environmental conditions.)

The approach has other advantages as the arrayed LEDs which feed into the mechanism would, because they ultimately feed into helicizers would, to the extent that there are inconsistencies between the individual pump diodes, be normalized to a certain extent by the helicization step as well as the dehelicization step as each helicization prism features what are effectively millions of channels and the tributary light from thousands of LEDs would intermix prior to entering the various mechanisms for control over frequency and phase. Each helicization prism, of course, acts as a great many polarity control mechanisms which force light to change in polarity to a differing total extent depending upon travel distance through the various tracks of the prism. This results in the signature “snap-in” effect which creates a rapid rotation of polarity in the ultimate byproduct of the prism. If light in any one track is more intense than another, excess light will not be de-helicized. Because the output of many LEDs are mixed prior to being passed through the various control mechanisms, which helicization track handles the byproduct of which pump diode will vary, which would help to address structural variations in the makeup of the prism, itself.

The net result is that, to the extent that there are inconsistencies in the amplitude of the tributary light generated, these spikes in amplitude have multiple opportunities to be equalized. One opportunity exists in the intermixing of light from many LED sources. The next, in whatever frequency-control mechanism is used (28 October 2025 is a recommended approach for this,) the next in the helicization process, which could be predicted to have a normalizing effect upon amplitude and, lastly, the dehelicization process, which converts only output power of the weaker of the two beams into omnidirectional light. *It should be possible, given the omnidirectional nature of the both the control and non-control beam sources, to separately gauge the specific intensity of each beam in real-time in order to account for any remaining variations and to take this into account when interpreting the final output data.*

The omni-directional light produced in the process of de-helicizing two sets of beams can be focused using optical channels in order to produce finely control phase-cancellations capable of negating nearly all photonic energy under the zero-ambient-EM condition.

The publication of 28 October 2025 should be considered for integration in the 5 November 2025 mechanism as it provides an energy-efficient means of producing light of a pure frequency and in the desired UV range. Extant

frequency purification mechanisms tend to reduce amplitude. As dehelicization will have the effect of reducing amplitude and as the light-slowing effects of the ambient EM to be measured are subtle, an intense initial light-source is desirable.

Conclusion

Although the need to incorporate into a design two helicizing prisms for each of the two needed beams (for a total of four helicization prisms) in the 5 November 2025 mechanism would introduce a greater degree of complexity to the mechanism, it would provide the needed amplitude control for a system which relies to a great extent upon the ability to generate two mode-synchronized beams in which each wave should have nearly identical numbers of photons. With this achieved, it should be feasible for radio-detection to be carried out along these lines.